

#7

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## SEQUENCE LISTING

<110> Colucci, M. Gabriella  
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<120> Progenitor Cell Preservation Factors and Methods for  
and Products of Their Use

<130> 108236.119

<140> US 09/476,485

<141> 1999-12-30

<150> US 08/881,189

<151> 1997-06-24

<160> 57

<170> PatentIn version 3.0

<210> 1

<211> 939

<212> DNA

<213> Artificial Sequence

<220>

<223> D1-FRIL.

<400> 1

gcacagtcacat tgtcatttag ttccaccaag ttgcatccta accaagagga tcttatcttc 60  
caaggctcatg ccacttctac aaacaatgtc ttacaagtca ccaagttaga cagtgcagga 120  
aaccctgtga gttctagtgc gggaagagtg ttatatctcg caccattgcg cctttgggaa 180  
gactctgcgg tattgacaag ctttgacacc attatcaact ttgaaatctc aacaccttac 240  
acttctcgta tagctgatgg cttggccttc ttcattgcac cacctgactc tgtcatcagt 300  
tatcatggtg gttttcttgg actctttccc aacgcaaaca ctctcaaca ctcttcacc 360  
tctgaaaacc aaaccaccac taaggctgca tcaagcaacg ttgttgctgt tgaatttgac 420  
acctatctta atcccgatta tggatgatcca aactacatac acatcggaat tgacgtcaac 480  
tctattagat ccaaggtaac tgctaagtgg gactggcaaa atgggaaaat agccactgca 540  
cacattagct ataactctgt ctctaaaaga ctatctgtta ctagttatta tgctgggagt 600  
aaacctgcga ctctctccta tgatattgag ttacatacag tgcttctga atgggtcaga 660  
gtagggttat ctgcttcaac tggacaagat aaagaaagaa ataccgttca ctcatgggtct 720  
ttcacttcaa gcttgtggac caatgtggcg aagaaggaga atgaaaacaa gtatattaca 780

agaggcggttc tgtgatgata tatgtgtatc aatgattttc tatgttataa gcatgtaatg 840  
 tgcgatgagt caataatcac aagtacagtg tagtacttgt atgttgtttg tgtaagagtc 900  
 agtttgcttt taataataac aagtgcagtt agtacttgt 939

<210> 2  
 <211> 264  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> D1-FRIL.

<400> 2

Ala Gly Ser Leu Ser Phe Ser Phe Thr Lys Phe Asp Pro Asn Gln Glu  
 1 5 10 15  
 Asp Leu Ile Phe Gln Gly His Ala Thr Ser Thr Asn Asn Val Leu Gln  
 20 25 30  
 Val Thr Lys Leu Asp Ser Ala Gly Asn Pro Val Ser Ser Ser Ala Gly  
 35 40 45  
 Arg Val Leu Tyr Ser Ala Pro Leu Arg Leu Trp Glu Asp Ser Ala Val  
 50 55 60  
 Leu Thr Ser Phe Asp Thr Ile Ile Asn Phe Glu Ile Ser Thr Pro Tyr  
 65 70 75 80  
 Thr Ser Arg Ile Ala Asp Gly Leu Ala Phe Phe Ile Ala Pro Pro Asp  
 85 90 95  
 Ser Val Ile Ser Tyr His Gly Gly Phe Leu Gly Leu Phe Pro Asn Ala  
 100 105 110  
 Asn Thr Leu Asn Asn Ser Ser Thr Ser Glu Asn Gln Thr Thr Thr Lys  
 115 120 125  
 Ala Ala Ser Ser Asn Val Val Ala Val Glu Phe Asp Thr Tyr Leu Asn  
 130 135 140  
 Pro Asp Tyr Gly Asp Pro Asn Tyr Ile His Ile Gly Ile Asp Val Asn  
 145 150 155 160  
 Ser Ile Arg Ser Lys Val Thr Ala Lys Trp Asp Trp Gln Asn Gly Lys  
 165 170 175  
 Ile Ala Thr Ala His Ile Ser Tyr Asn Ser Val Ser Lys Arg Leu Ser  
 180 185 190  
 Val Thr Ser Tyr Tyr Ala Gly Ser Lys Pro Ala Thr Leu Ser Tyr Asp  
 195 200 205

Ile Glu Leu His Thr Val Leu Pro Glu Trp Val Arg Val Gly Leu Ser  
 210 215 220

Ala Ser Thr Gly Gln Asp Lys Glu Arg Asn Thr Val His Ser Trp Ser  
 225 230 235 240

Phe Thr Ser Ser Leu Trp Thr Asn Val Ala Lys Lys Glu Asn Glu Asn  
 245 250 255

Lys Tyr Ile Thr Arg Gly Val Leu  
 260

<210> 3  
 <211> 1005  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Nucleic acid sequence of the naturally-occurring D1-FRIL protein.

<400> 3  
 atggcttcct ccaacttact caccctagcc ctcttccttg tgcttctcac ccacgcaaac 60  
 tcagccgcac agtcattgtc atttagtttc accaagtttg atcctaacca agaggatctt 120  
 atcttccaag gtcattgccac ttctacaaac aatgtcttac aagtcaccaa gttagacagt 180  
 gcaggaaacc ctgtgagttc tagtgcgga agagtgttat attctgcacc attgcgcctt 240  
 tgggaagact ctgcggtatt gacaagcttt gacaccatta tcaactttga aatctcaaca 300  
 ccttacactt ctcgatatagc tgatggcttg gccttcttca ttgcaccacc tgactctgtc 360  
 atcagttatc atgggtggttt tcttggaactc tttcccaacg caaacactct caacaactct 420  
 tccaactctg aaaaccaaac caccactaag gctgcatcaa gcaacgttgt tgctgttgaa 480  
 tttgacacct atcttaatcc cgattatggt gatccaaact acatacacat cggaattgac 540  
 gtcaactcta ttagatccaa ggtaactgct aagtgggact ggcaaaatgg gaaaatagcc 600  
 actgcacaca ttagctataa ctctgtctct aaaagactat ctgttactag ttattatgct 660  
 gggagtaaac ctgcgactct ctctatgat attgagttac atacagtgtc tcctgaatgg 720  
 gtcagagtag ggttatctgc ttcaactgga caagataaag aaagaaatac cgttactca 780  
 tggcttttca cttcaagctt gtggaccaat gtggcgaaga aggagaatga aaacaagtat 840  
 attacaagag gcgttctgtg atgatatatg tgtatcaatg attttctatg ttataagcat 900  
 gtaatgtgcg atgagtcaat aatcacaagt acagtgtagt acttgtatgt tgtttgtgta 960  
 agagtcagtt tgcttttaat aataacaagt gcagtttagta cttgt 1005

<210> 4  
 <211> 22  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Signal sequence from the FRIL family isolated from Dolichos lab 1  
 ab

<400> 4

Met Ala Ser Ser Asn Leu Leu Thr Leu Ala Leu Phe Leu Val Leu Leu  
 1 5 10 15

Thr His Ala Asn Ser Ala  
 20

<210> 5  
 <211> 914  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Pv-FRIL.

<400> 5  
 gctcagtcac tatcttttaa ctttaccaag tttgatcttg accaaaaaga tcttatcttc 60  
 caaggtgatg ccacttctac aaacaatgtc ttacaactca ctaagttaga cagtggagga 120  
 aaccctgtgg gtgctagtgt gggaagagtg ttattctctg caccatttca tctttgggaa 180  
 aactctatgg cagtgtcaag ctttgaaact aatctcacca ttcaaatttc aacacctcac 240  
 cttattatg cagctgatgg ctttgccttc ttccttgac cacatgacac tgtcatccct 300  
 ccaaattctt ggggcaaatt ccttggactc tactcaaacg ttttcagaaa ctccccacc 360  
 tctgaaaacc aaagcttttg tgatgtcaat actgactcaa gagttgttgc tgcgaattt 420  
 gacaccttcc ctaatgccaa tattgatcca aattacagac acattggaat cgatgtgaac 480  
 tctattaagt ccaaggaaac tgctaggtgg gagtggaaca atgggaaaac ggccactgca 540  
 cgcacagct ataactctgc ctctaaaaaa tcaactgtta ctacgtttta tcctgggatg 600  
 gaagttgtgg ctctctccca tgatgttgac ttacatgcag agcttcctga atggggttaga 660  
 gtagggttat ctgcttcaac tggagaggag aaacaaaaaa ataccattat ctcattgtct 720  
 ttcacttcaa gcttgaagaa caacgaggtg aaggagccga aagaagacat gtatattgca 780  
 aacgttgtgc gatcatatac atggatcaat gacgttctat cttatataag caataaataa 840

atgtatgatg cactcaataa taatcacaag tacgtacggt gtagtacttg tatgttgttt 900

atgaaaaaaaa aaaa 914

<210> 6  
 <211> 303  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Pv-FRIL.

<400> 6

Ala Gln Ser Leu Ser Phe Asn Phe Thr Lys Phe Asp Leu Asp Gln Lys  
 1 5 10 15

Asp Leu Ile Phe Gln Gly Asp Ala Thr Ser Thr Asn Asn Val Leu Gln  
 20 25 30

Leu Thr Lys Leu Asp Ser Gly Gly Asn Pro Val Gly Ala Ser Val Gly  
 35 40 45

Arg Val Leu Phe Ser Ala Pro Phe His Leu Trp Glu Asn Ser Met Ala  
 50 55 60

Val Ser Ser Phe Glu Thr Asn Leu Thr Ile Gln Ile Ser Thr Pro His  
 65 70 75 80

Pro Tyr Tyr Ala Ala Asp Gly Phe Ala Phe Phe Leu Ala Pro His Asp  
 85 90 95

Thr Val Ile Pro Pro Asn Ser Trp Gly Lys Phe Leu Gly Leu Tyr Ser  
 100 105 110

Asn Val Phe Arg Asn Ser Pro Thr Ser Glu Asn Gln Ser Phe Gly Asp  
 115 120 125

Val Asn Thr Asp Ser Arg Val Val Ala Val Glu Phe Asp Thr Phe Pro  
 130 135 140

Asn Ala Asn Ile Asp Pro Asn Tyr Arg His Ile Gly Ile Asp Val Asn  
 145 150 155 160

Ser Ile Lys Ser Lys Glu Thr Ala Arg Trp Glu Trp Gln Asn Gly Lys  
 165 170 175

Thr Ala Thr Ala Arg Ile Ser Tyr Asn Ser Ala Ser Lys Lys Ser Thr  
 180 185 190

Val Thr Thr Phe Tyr Pro Gly Met Glu Val Val Ala Leu Ser His Asp  
 195 200 205

Val Asp Leu His Ala Glu Leu Pro Glu Trp Val Arg Val Gly Leu Ser

|   |     |         |
|---|-----|---------|
| 210   | 215 | 220     |
| Ala Ser Thr Gly Glu Glu Lys Gln Lys Asn Thr Ile Ile Ser Trp Ser |     |         |
| 225   | 230 | 235 240 |
| Phe Thr Ser Ser Leu Lys Asn Asn Glu Val Lys Glu Pro Lys Glu Asp |     |         |
|   | 245 | 250 255 |
| Met Tyr Ile Ala Asn Val Val Arg Ser Tyr Thr Trp Ile Asn Asp Val |     |         |
|   | 260 | 265 270 |
| Leu Ser Tyr Ile Ser Asn Lys Met Tyr Asp Ala Leu Asn Asn Asn His |     |         |
|   | 275 | 280 285 |
| Lys Tyr Val Arg Cys Ser Thr Cys Met Leu Phe Met Lys Lys Lys     |     |         |
|   | 290 | 295 300 |

<210> 7  
 <211> 678  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> YamFril partial mRNA sequence.

<400> 7  
 acgaagttcg acagcgacca aaaggatctt atgttccaag gtcataccat ttctagcagc 60  
 aatgtcatac aactcaccaa gttagacagt aatggaaacc ctgtgagtac cagtgtggga 120  
 agagtgttat actctgcacc attgogcctt tgggaaagct ctacagtagt gtcaaccttt 180  
 gagaccactt tcacctttca aatotcaaca ccttacacta gtccctcctgg tgatgggctc 240  
 gccttcttcc ttgcaccata tgacactgtc atccctccaa attctgctgg caatcttctt 300  
 ggactctttc ctaacttaaa tgctttaaga aactccacca ccagtaaaga aaccactatt 360  
 gatgtcaatg ctgcatctaa caacgttggt gccgttgaat ttgacaccta ccctaacgac 420  
 aatattggtg atccaagata caaacacatt ggaatcgatg tcaactctat caggtccaag 480  
 gcaactgttg cgtgggactg gcaaaatggg aaaacagcca ctgcacacat cagctataac 540  
 tctgcctcta aaagactatc tggttactact ttttatcctg ggggtaaagc tgtgagtctt 600  
 tcccatgacg ttgagctcac tcaagtgcct cctcaatgga ttagagtagg gttctctgct 660  
 tcaacaggat tagagaaa 678

<210> 8  
 <211> 234  
 <212> PRT

<213> Artificial Sequence

<220>

<223> YamFril deduced amino acid sequence.

<400> 8

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Gln | Ser | Val | Ser | Phe | Thr | Phe | Thr | Lys | Phe | Asp | Ser | Asp | Gln | Lys | 1   | 5   | 10  | 15  |
| Asp | Leu | Met | Phe | Gln | Gly | His | Thr | Ile | Ser | Ser | Ser | Asn | Val | Ile | Gln | 20  | 25  | 30  |     |
| Leu | Thr | Lys | Leu | Asp | Ser | Asn | Gly | Asn | Pro | Val | Ser | Thr | Ser | Val | Gly | 35  | 40  | 45  |     |
| Arg | Val | Leu | Tyr | Ser | Ala | Pro | Leu | Arg | Leu | Trp | Glu | Ser | Ser | Thr | Val | 50  | 55  | 60  |     |
| Val | Ser | Thr | Phe | Glu | Thr | Thr | Phe | Thr | Phe | Gln | Ile | Ser | Thr | Pro | Tyr | 65  | 70  | 75  | 80  |
| Thr | Ser | Pro | Pro | Gly | Asp | Gly | Leu | Ala | Phe | Phe | Leu | Ala | Pro | Tyr | Asp | 85  | 90  | 95  |     |
| Thr | Val | Ile | Pro | Pro | Asn | Ser | Ala | Gly | Asn | Leu | Leu | Gly | Leu | Phe | Pro | 100 | 105 | 110 |     |
| Asn | Leu | Asn | Ala | Leu | Arg | Asn | Ser | Thr | Thr | Ser | Lys | Glu | Thr | Thr | Ile | 115 | 120 | 125 |     |
| Asp | Val | Asn | Ala | Ala | Ser | Asn | Asn | Val | Val | Ala | Val | Glu | Phe | Asp | Thr | 130 | 135 | 140 |     |
| Tyr | Pro | Asn | Asp | Asn | Ile | Gly | Asp | Pro | Tyr | Arg | Lys | His | Ile | Gly | Ile | 145 | 150 | 155 | 160 |
| Asp | Val | Asn | Ser | Ile | Arg | Ser | Lys | Ala | Thr | Val | Ala | Trp | Asp | Trp | Gln | 165 | 170 | 175 |     |
| Asn | Gly | Lys | Thr | Ala | Thr | Ala | His | Ile | Ser | Tyr | Asn | Ser | Ala | Ser | Lys | 180 | 185 | 190 |     |
| Arg | Leu | Ser | Val | Thr | Thr | Phe | Tyr | Pro | Gly | Gly | Lys | Ala | Val | Ser | Leu | 195 | 200 | 205 |     |
| Ser | His | Asp | Val | Glu | Leu | Thr | Gln | Val | Leu | Pro | Gln | Trp | Ile | Arg | Val | 210 | 215 | 220 |     |
| Gly | Phe | Ser | Ala | Ser | Thr | Gly | Leu | Glu | Lys | 225 | 230 |     |     |     |     |     |     |     |     |

<210> 9

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Beta band polypeptide.

<400> 9

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Gln | Ser | Val | Ser | Phe | Thr | Phe | Thr | Lys | Phe | Asp | Ser | Asp | Gln |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |

<210> 10

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Alpha band polypeptide.

<220>

<221> PEPTIDE

<222> (14)..(14)

<223> Amino acid 14 is Xaa wherein Xaa = any amino acid.

<400> 10

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ala | Ser | Asn | Asn | Val | Val | Ala | Val | Glu | Phe | Asp | Thr | Xaa | Pro | Asn |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     |     | 15  |

<210> 11

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> MLA degenerate oligonucleotide primer.

<220>

<221> misc\_feature

<222> (3)..(21)

<223> Nucleotides 3, 18 and 21 are n wherein n = a or g.

<220>

<221> misc\_feature

<222> (6)..(15)

<223> Nucleotides 6, 9, and 15 are n wherein n = t or c.



<220>  
 <221> misc\_feature  
 <222> (12)..(12)  
 <223> Nucleotide 12 is n wherein n = a or t.

<400> 11  
 aanttganc cnaancanga nga

23

<210> 12  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> MLZ degenerate oligonucleotide primer.

<220>  
 <221> misc\_feature  
 <222> (3)..(3)  
 <223> Nucleotide 3 is n wherein n = a or t.

<220>  
 <221> misc\_feature  
 <222> (6)..(15)  
 <223> Nucleotides 6 and 15 are n wherein n = a or g.

<220>  
 <221> misc\_feature  
 <222> (9)..(9)  
 <223> Nucleotide 9 is n wherein n = t or c.

<400> 12  
 ttnccnttnt gccantccca

20

<210> 13  
 <211> 15  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer.

<400> 13  
 gtaccgagct cggat

15

<210> 14  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer.

<400> 14  
 tctagatgca tgctcgag

18

<210> 15  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> MLX primer.

<400> 15  
 gttggacgtc aattccgatg tg

22

<210> 16  
 <211> 17  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> MLI degenerate primer.

<220>  
 <221> misc\_feature  
 <222> (3)..(15)  
 <223> Nucleotides 3, 9, 12 and 15 are n wherein n = t or c.

<220>  
 <221> misc\_feature  
 <222> (6)..(6)  
 <223> Nucleotide 6 is n wherein n = a or g.

<400> 16  
 gcncantcnc tntcntt

17

<210> 17  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Oligo(dT) anchor primer.

<400> 17  
 gaccacgcgt atcgatgtcg ac

22

<210> 18  
 <211> 21  
 <212> .DNA  
 <213> Artificial Sequence

<220>  
 <223> MLB primer.

<400> 18  
 aagttagaca gtgcaggaaa c

21

<210> 19  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> MLII primer.

<400> 19  
 gcacagtcac tgatcatttag

20

<210> 20  
 <211> 18  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> D1-FRIL.

<400> 20

Tyr Leu Asn Pro Asp Tyr Gly Asp Pro Asn Tyr Ile His Ile Gly Ile  
 1 5 10 15

Asp Val

<210> 21  
 <211> 19  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Pea.

<400> 21

Phe Tyr Asn Ala Ala Trp Asp Pro Ser Asn Arg Asp Arg His Ile Gly  
 1 5 10 15

Ile Asp Val

<210> 22  
 <211> 1005  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> SpDLA.

<400> 22  
 atggcttcct ccaacttact caccctagcc ctcttcttg tgcttctcac ccacgcaaac 60  
 tcagccgcac agtcattgtc atttagtttc accaagtttg atcctaacca agaggatctt 120  
 atcttccaag gtcattgccac ttctacaaac aatgtcttac aagtcaccaa gttagacagt 180  
 gcaggaaacc ctgtgagttc tagtgcgga agagtgttat attctgcacc attgcgcctt 240  
 tgggaagact ctgcggtatt gacaagcttt gacaccatta tcaactttga aatctcaaca 300  
 ccttacactt ctcgatatagc tgatggcttg gccttcttca ttgcaccacc tgactctgtc 360  
 atcagttatc atgggtggttt tcttggaactc tttcccaacg caaacactct caacaactct 420  
 tccacctctg aaaaccaaac caccactaag gctgcatcaa gcaacgttgt tgctgttgaa 480  
 tttgacacct atcttaatcc cgattatggg gatccaaact acatacacat cggaattgac 540  
 gtcaactcta ttagatccaa ggtaactgct aagtgggact ggcaaaatgg gaaaatagcc 600  
 actgcacaca ttagctataa ctctgtctct aaaagactat ctgttactag ttattatgct 660  
 gggagtaaac ctgcgactct ctctatgat attgagttac atacagtgtc tcctgaatgg 720  
 gtcagagtag gggtatctgc ttcaactgga caagataaag aaagaaatac cgttcactca 780

tgggtctttca cttcaagctt gtggaccaat gtggcgaaga aggagaatga aaacaagtat 840  
 attacaagag gcgttctgtg atgatatatg tgtatcaatg attttctatg ttataagcat 900  
 gtaatgtgcg atgagtcaat aatcacaagt acagtgtagt acttgtatgt tgtttgtgta 960  
 agagtcagtt tgcttttaat aataacaagt gcagttagta cttgt 1005

<210> 23  
 <211> 286  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> SpDLA.

<400> 23

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Ser | Ser | Asn | Leu | Leu | Thr | Leu | Ala | Leu | Phe | Leu | Val | Leu | Leu | 1   | 5   | 10  | 15  |
| Thr | His | Ala | Asn | Ser | Ala | Ala | Gln | Ser | Leu | Ser | Phe | Ser | Phe | Thr | Lys | 20  | 25  | 30  |     |
| Phe | Asp | Pro | Asn | Gln | Glu | Asp | Leu | Ile | Phe | Gln | Gly | His | Ala | Thr | Ser | 35  | 40  | 45  |     |
| Thr | Asn | Asn | Val | Leu | Gln | Val | Thr | Lys | Leu | Asp | Ser | Ala | Gly | Asn | Pro | 50  | 55  | 60  |     |
| Val | Ser | Ser | Ser | Ala | Gly | Arg | Val | Leu | Tyr | Ser | Ala | Pro | Leu | Arg | Leu | 65  | 70  | 75  | 80  |
| Trp | Glu | Asp | Ser | Ala | Val | Leu | Thr | Ser | Phe | Asp | Thr | Ile | Ile | Asn | Phe | 85  | 90  | 95  |     |
| Glu | Ile | Ser | Thr | Pro | Tyr | Thr | Ser | Arg | Ile | Ala | Asp | Gly | Leu | Ala | Phe | 100 | 105 | 110 |     |
| Phe | Ile | Ala | Pro | Pro | Asp | Ser | Val | Ile | Ser | Tyr | His | Gly | Gly | Phe | Leu | 115 | 120 | 125 |     |
| Gly | Leu | Phe | Pro | Asn | Ala | Asn | Thr | Leu | Asn | Asn | Ser | Ser | Thr | Ser | Glu | 130 | 135 | 140 |     |
| Asn | Gln | Thr | Thr | Thr | Lys | Ala | Ala | Ser | Ser | Asn | Val | Val | Ala | Val | Glu | 145 | 150 | 155 | 160 |
| Phe | Asp | Thr | Tyr | Leu | Asn | Pro | Asp | Tyr | Gly | Asp | Pro | Asn | Tyr | Ile | His | 165 | 170 | 175 |     |
| Ile | Gly | Ile | Asp | Val | Asn | Ser | Ile | Arg | Ser | Lys | Val | Thr | Ala | Lys | Trp | 180 | 185 | 190 |     |

Asp Trp Gln Asn Gly Lys Ile Ala Thr Ala His Ile Ser Tyr Asn Ser  
 195 200 205

Val Ser Lys Arg Leu Ser Val Thr Ser Tyr Tyr Ala Gly Ser Lys Pro  
 210 215 220

Ala Thr Leu Ser Tyr Asp Ile Glu Leu His Thr Val Leu Pro Glu Trp  
 225 230 235 240

Val Arg Val Gly Leu Ser Ala Ser Thr Gly Gln Asp Lys Glu Arg Asn  
 245 250 255

Thr Val His Ser Trp Ser Phe Thr Ser Ser Leu Trp Thr Asn Val Ala  
 260 265 270

Lys Lys Glu Asn Glu Asn Lys Tyr Ile Thr Arg Gly Val Leu  
 275 280 285

<210> 24

<211> 8

<212> PRT

<213> Dolichos lablab

<220>

<221> PEPTIDE

<222> (7)..(7)

<223> Amino acid 7 is Xaa wherein Xaa = any amino acid.

<400> 24

Thr Asn Asn Val Leu Gln Xaa Thr  
 1 5

<210> 25

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> MutI primer.

<400> 25

ccataatcgg gatcaagata ggtg

24

<210> 26

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> MutII primer.

<400> 26  
cacctatctt gatcccgatt atgg

24

<210> 27  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> M1 Forw primer.

<400> 27  
aactcagccg cacagtcatt gtca

24

<210> 28  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> APEcoRI primer.

<400> 28  
gaattcgacc acgcgtatcg atgtcgac

28

<210> 29  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Sigforw primer.

<400> 29  
gaattcatgg cttcctccaa c

21

<210> 30  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Sigrev primer.

<400> 30  
tgactgtgcg gctgagtttg cgtgggtg

28

<210> 31  
<211> 14  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Peptide corresponding to Pv-FRIL.

<220>  
<221> PEPTIDE  
<222> (7)..(7)  
<223> Amino acid 7 is Xaa wherein Xaa = Asn, Cys or Ser.

<400> 31

Ala Gln Ser Leu Ser Phe Xaa Phe Thr Lys Phe Asp Leu Asp  
1 5 10

<210> 32  
<211> 14  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Polypeptide of 18 kDa.

<220>  
<221> PEPTIDE  
<222> (7)..(7)  
<223> Amino acid 7 is Xaa wherein Xaa = unknown amino acid.

<400> 32

Ala Gln Ser Leu Ser Phe Xaa Phe Thr Lys Asp Ala Leu Asp  
1 5 10

<210> 33  
<211> 14  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Aminoterminal sequence.



<220>  
 <221> PEPTIDE  
 <222> (12)..(12)  
 <223> Amino acid 12 is Xaa wherein Xaa = unknown amino acid.

<400> 33

Thr Asp Ser Arg Val Val Ala Val Glu Phe Asp Xaa Phe Pro  
 1                   5                   10

<210> 34  
 <211> 13  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Aminoterminal polypeptide.

<220>  
 <221> PEPTIDE  
 <222> (7)..(7)  
 <223> Amino acid 7 is Xaa wherein Xaa = unknown amino acid.

<400> 34

Ala Gln Ser Leu Ser Phe Xaa Phe Lys Phe Asp Pro Asn  
 1                   5                   10

<210> 35  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Aminoterminal polypeptide.

<400> 35

Thr Asp Ser Arg Val Val Ala Val Glu Asp Phe  
 1                   5                   10

<210> 36  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Degenerate oligonucleotide PVBetal.

<220>  
<221> misc\_feature  
<222> (18)..(18)  
<223> Nucleotide 18 is n wherein n = any nucleotide.

<400> 36  
ttyacyaart tygayytnga 20

<210> 37  
<211> 17  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Degenerate oligonucleotide PVBeta2.

<400> 37  
atyttycarg gwgaygc 17

<210> 38  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Degenerate oligonucleotide PValfa1.

<400> 38  
ttracrta twccratrtg 20

<210> 39  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Degenerate oligonucleotide PValfa2.

<400> 39  
tarttwggrrt cratrttrgc rtt 23

<210> 40  
<211> 22

<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> PV3 PCR-Anchor primer.

<400> 40  
caatgtctta caactcacta ag 22

<210> 41  
<211> 21  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> PV4 PCR-Anchor primer.

<400> 41  
agtgtgggaa gagtgttatt c 21

<210> 42  
<211> 21  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> SPV2 Anchor primer.

<400> 42  
accaaagctt tggttttcag a 21

<210> 43  
<211> 21  
<212> DNA  
<213> Artificial Sequence  
  
<220>  
<223> SPV3 Anchor primer.

<400> 43  
tctgaaaacg tttgagtaga g 21

<210> 44  
<211> 32  
<212> DNA

<213> Artificial Sequence

<220>

<223> PVEcoRI primer.

<400> 44

tacatgaatt cgctcagtca ttatctttta ac

32

<210> 45

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Sigfor BglII primer.

<400> 45

agatctatgg cttcctccaa c

21

<210> 46

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Sigrev primer.

<400> 46

aaagataatg actgagcggc tgagtttgcg tg

32

<210> 47

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> SpM1forw primer.

<400> 47

cacgcaact cagccgctca gtcattatct tt

32

<210> 48

<211> 27

<212> DNA

<213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; APXhoI primer.

&lt;400&gt; 48

ctcgaggacc acgcgtatcg atgtcga

27

&lt;210&gt; 49

&lt;211&gt; 106

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Beta-subunit of the mannose lectin of Gowda et al.

&lt;400&gt; 49

Ala Gln Ser Leu Ser Phe Ser Ser Phe Thr Lys Phe Asp Pro Asn Gln  
 1 5 10 15  
 Glu Asp Leu Ile Phe Gln Gly Thr Ala Thr Ser Lys Leu Asp Ser Ala  
 20 25 30  
 Gly Asn Pro Val Ser Ser Ser Ala Gly Arg Val Leu Tyr Ser Ala Pro  
 35 40 45  
 Leu Arg Leu Trp Glu Asp Ser Ala Val Leu Thr Ser Phe Asp Pro Thr  
 50 55 60  
 Ile Tyr Ile Phe Thr Asn Tyr Thr Ser Arg Ile Ala Asp Gly Leu Ala  
 65 70 75 80  
 Phe Ile Ala Pro Pro Asp Ser Val Ile Ser Tyr His Gly Gly Phe Leu  
 85 90 95  
 Gly Leu Phe Pro Asn Ala Ala Glu Ser Gly  
 100 105

&lt;210&gt; 50

&lt;211&gt; 123

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Beta-subunit of D1-FRIL.

&lt;400&gt; 50

Ala Gln Ser Leu Ser Phe Ser Phe Thr Lys Phe Asp Pro Asn Gln Glu  
 1 5 10 15  
 Asp Leu Ile Phe Gln Gly His Ala Thr Ser Thr Asn Asn Val Leu Gln

20                      25                      30  
 Val Thr Lys Leu Asp Ser Ala Gly Asn Pro Val Ser Ser Ser Ala Gly  
           35                      40                      45  
 Arg Val Leu Tyr Ser Ala Pro Leu Arg Leu Trp Glu Asp Ser Ala Val  
           50                      55                      60  
 Leu Thr Ser Phe Asp Thr Ile Ile Asn Phe Glu Ile Ser Thr Pro Tyr  
           65                      70                      75                      80  
 Thr Ser Arg Ile Ala Asp Gly Leu Ala Phe Phe Ile Ala Pro Pro Asp  
                                  85                      90                      95  
 Ser Val Ile Ser Tyr His Gly Gly Phe Leu Gly Leu Phe Pro Asn Ala  
                                  100                      105                      110  
 Asn Thr Leu Asn Asn Ser Ser Thr Ser Glu Asn  
                                  115                      120

<210> 51  
 <211> 132  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Alpha-subunit of the mannose lectin of Gowda et al.

<400> 51

Ile Ala Glu Ser Asn Val Val Ala Val Glu Phe Asp Thr Asp Tyr Leu  
 1                      5                      10                      15  
 Asn Pro Asp Tyr Gly Asp Pro Asn Tyr Ile His Ile Gly Ile Asp Val  
                                  20                      25                      30  
 Asn Ser Ile Arg Ser Lys Val Thr Ala Ser Trp Asp Trp Gln Asn Gly  
                                  35                      40                      45  
 Lys Ile Ala Thr Ala His Ile Ser Tyr Asn Ser Val Ser Lys Arg Leu  
                                  50                      55                      60  
 Ser Val Thr Thr Tyr Tyr Pro Gly Arg Gly Lys Pro Ala Thr Ser Tyr  
                                  65                      70                      75                      80  
 Asp Ile Glu Leu His Thr Val Leu Pro Glu Trp Val Arg Val Gly Leu  
                                  85                      90                      95  
 Ser Ala Ser Thr Gly Gln Asn Ile Glu Arg Asn Thr Val His Ser Trp  
                                  100                      105                      110  
 Ser Phe Thr Ser Ser Leu Trp Thr Asn Val Ala Lys Val Gly Val Ala  
                                  115                      120                      125  
 Ser Ile Ser Gly

130

<210> 52  
 <211> 147  
 <212> PRT  
 <213> Artificial Sequence  
 <220>  
 <223> Alpha-subunit of D1-FRIL.

&lt;400&gt; 52

Gln Thr Thr Thr Lys Ala Ala Ser Ser Asn Val Val Ala Val Glu Phe  
 1 5 10 15  
 Asp Thr Tyr Leu Asn Pro Asp Tyr Gly Asp Pro Asn Tyr Ile His Ile  
 20 25 30  
 Gly Ile Asp Val Asn Ser Ile Arg Ser Lys Val Thr Ala Lys Trp Asp  
 35 40 45  
 Trp Gln Asn Gly Lys Ile Ala Thr Ala His Ile Ser Tyr Asn Ser Val  
 50 55 60  
 Ser Lys Arg Leu Ser Val Thr Ser Tyr Tyr Ala Gly Ser Lys Pro Ala  
 65 70 75 80  
 Thr Leu Ser Tyr Asp Ile Glu Leu His Thr Val Leu Pro Glu Trp Val  
 85 90 95  
 Arg Val Gly Leu Ser Ala Ser Thr Gly Gln Asp Lys Glu Arg Asn Thr  
 100 105 110  
 Val His Ser Trp Ser Phe Thr Ser Ser Leu Trp Thr Asn Val Ala Lys  
 115 120 125  
 Lys Glu Asn Glu Asn Lys Tyr Ile Thr Arg Gly Val Leu Tyr Met Cys  
 130 135 140  
 Ile Asn Asp  
 145

<210> 53  
 <211> 64  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Recombinant expression vector.

<400> 53  
 ctgggtccgc gtggatcccc ggaattcatg cccggttcga ctcgagcggc cgcattcgtga 60

ctga

64

<210> 54  
 <211> 54  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Recombinant expression vector.

<400> 54  
 ctgggttcgc gtggatcccc ggaattcatg ctcgagcggc cgcacgtga ctga 54

<210> 55  
 <211> 237  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> DLL.

<400> 55

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| Ala | Gln | Ser | Leu | Ser | Phe | Ser | Phe | Thr | Lys | Phe | Asp | Pro | Asn | Gln | Glu | 1   | 5   | 10  | 15 |
| Asp | Leu | Ile | Phe | Gln | Gly | Thr | Ala | Thr | Ser | Lys | Leu | Asp | Ser | Ala | Gly | 20  | 25  | 30  |    |
| Asn | Pro | Val | Ser | Ser | Ser | Ala | Gly | Arg | Val | Leu | Tyr | Ser | Ala | Pro | Leu | 35  | 40  | 45  |    |
| Arg | Leu | Trp | Glu | Asp | Ser | Ala | Val | Leu | Thr | Ser | Phe | Asp | Pro | Thr | Ile | 50  | 55  | 60  |    |
| Tyr | Ile | Phe | Thr | Asn | Tyr | Thr | Ser | Arg | Ile | Ala | Asp | Gly | Leu | Ala | Phe | 65  | 70  | 75  | 80 |
| Ile | Ala | Pro | Pro | Asp | Ser | Val | Ile | Ser | Tyr | His | Gly | Gly | Phe | Leu | Gly | 85  | 90  | 95  |    |
| Leu | Phe | Pro | Asn | Ala | Ala | Glu | Ser | Gly | Ile | Ala | Glu | Ser | Asn | Val | Val | 100 | 105 | 110 |    |
| Ala | Val | Glu | Phe | Asp | Thr | Asp | Tyr | Leu | Asn | Pro | Asp | Tyr | Gly | Asp | Pro | 115 | 120 | 125 |    |
| Asn | Tyr | Ile | His | Ile | Gly | Ile | Asp | Val | Asn | Ser | Ile | Arg | Ser | Lys | Val | 130 | 135 | 140 |    |
| Thr | Ala | Ser | Trp | Asp | Trp | Gln | Asn | Gly | Lys | Ile | Ala | Thr | Ala | His | Ile |     |     |     |    |



145                      150                      155                      160  
 Ser Tyr Asn Ser Val Ser Lys Arg Leu Ser Val Thr Thr Tyr Tyr Pro  
                                  165                      170                      175  
 Gly Arg Gly Lys Pro Ala Thr Ser Tyr Asp Leu Glu Leu His Thr Val  
                                  180                      185                      190  
 Leu Pro Glu Trp Val Arg Val Gly Leu Ser Ala Ser Thr Gly Gln Asn  
                                  195                      200                      205  
 Ile Glu Arg Asn Thr Val His Ser Trp Ser Phe Thr Ser Ser Leu Trp  
                                  210                      215                      220  
 Thr Asn Val Ala Lys Val Gly Val Ala Ser Ile Ser Gly  
 225                      230                      235

<210> 56  
 <211> 279  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> PvFRIL.

<400> 56

Ala Gln Ser Leu Ser Phe Asn Phe Thr Lys Phe Asp Leu Asp Gln Lys  
 1                      5                      10                      15  
 Asp Leu Ile Phe Gln Gly Asp Ala Thr Ser Thr Asn Asn Val Leu Gln  
                                  20                      25                      30  
 Leu Thr Lys Leu Asp Ser Gly Gly Asn Pro Val Gly Ala Ser Val Gly  
                                  35                      40                      45  
 Arg Val Leu Phe Ser Ala Pro Phe His Leu Trp Glu Asn Ser Met Ala  
                                  50                      55                      60  
 Val Ser Ser Phe Glu Thr Asn Leu Thr Ile Gln Ile Ser Thr Pro His  
 65                      70                      75                      80  
 Pro Tyr Tyr Ala Ala Asp Gly Phe Ala Phe Phe Leu Ala Pro His Asp  
                                  85                      90                      95  
 Thr Val Ile Pro Pro Asn Ser Trp Gly Lys Phe Leu Gly Leu Tyr Ser  
                                  100                      105                      110  
 Asn Val Phe Arg Asn Ser Pro Thr Ser Glu Asn Gln Ser Phe Gly Asp  
                                  115                      120                      125  
 Val Asn Thr Asp Ser Arg Val Val Ala Val Glu Phe Asp Thr Phe Pro  
                                  130                      135                      140  
 Asn Ala Asn Ile Asp Pro Asn Tyr Arg His Ile Gly Ile Asp Val Asn

145                      150                      155                      160  
 Ser Ile Lys Ser Lys Glu Thr Ala Arg Trp Glu Trp Gln Asn Gly Lys  
                                  165                      170                      175  
 Thr Ala Thr Ala Arg Ile Ser Tyr Asn Ser Ala Ser Lys Lys Ser Thr  
                                  180                      185                      190  
 Val Thr Thr Phe Tyr Pro Gly Met Glu Val Val Ala Leu Ser His Asp  
                                  195                      200                      205  
 Val Asp Leu His Ala Glu Leu Pro Glu Trp Val Arg Val Gly Leu Ser  
                                  210                      215                      220  
 Ala Ser Thr Gly Glu Glu Lys Gln Lys Asn Thr Ile Ile Ser Trp Ser  
                                  225                      230                      235                      240  
 Phe Thr Ser Ser Leu Lys Asn Asn Glu Val Lys Glu Pro Lys Glu Asp  
                                  245                      250                      255  
 Met Tyr Ile Ala Asn Val Val Arg Ser Tyr Thr Trp Ile Asn Asp Val  
                                  260                      265                      270  
 Leu Ser Tyr Ile Ser Asn Lys  
                                  275

<210> 57  
 <211> 254  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> PHA-E.

<400> 57

Ala Ser Gln Thr Ser Phe Ser Phe Gln Arg Phe Asn Glu Thr Asn Leu  
 1                      5                      10                      15  
 Ile Leu Gln Arg Asp Ala Thr Val Ser Ser Lys Gly Gln Leu Arg Leu  
                                  20                      25                      30  
 Thr Asn Val Asn Asp Asn Gly Glu Pro Thr Leu Ser Ser Leu Gly Arg  
                                  35                      40                      45  
 Ala Phe Tyr Ser Ala Pro Ile Gln Ile Trp Asp Asn Thr Thr Gly Ala  
                                  50                      55                      60  
 Val Ala Ala Ser Pro Thr Ser Phe Thr Phe Asn Ile Asp Val Pro Asn  
 65                      70                      75                      80  
 Asn Ser Gly Pro Ala Asp Gly Leu Ala Phe Val Leu Leu Pro Val Gly  
                                  85                      90                      95  
 Ser Gln Pro Lys Asp Lys Gly Gly Leu Leu Gly Leu Phe Asn Asn Tyr

| 100  | 105 | 110     |
|--|-----|---------|
| Lys Tyr Asp Ser Asn Ala His Thr Val Ala Val Glu Phe Asp Thr Leu<br>115 | 120 | 125     |
| Tyr Asn Val His Trp Asp Pro Lys Pro Arg His Ile Gly Ile Asp Val<br>130 | 135 | 140     |
| Asn Ser Ile Lys Ser Ile Lys Thr Thr Thr Trp Asp Phe Val Lys Gly<br>145 | 150 | 155 160 |
| Glu Asn Ala Glu Val Leu Ile Thr Tyr Asp Ser Ser Thr Lys Leu Leu<br>165 | 170 | 175     |
| Val Ala Ser Leu Val Tyr Pro Ser Leu Lys Thr Ser Phe Ile Val Ser<br>180 | 185 | 190     |
| Asp Thr Val Asp Leu Lys Ser Val Leu Pro Glu Trp Val Ile Val Gly<br>195 | 200 | 205     |
| Phe Thr Ala Thr Thr Gly Ile Thr Lys Gly Asn Val Glu Thr Asn Asp<br>210 | 215 | 220     |
| Ile Leu Ser Trp Ser Phe Ala Ser Lys Leu Ser Asp Gly Thr Thr Ser<br>225 | 230 | 235 240 |
| Glu Ala Leu Asn Leu Ala Asn Phe Ala Leu Asn Gln Ile Leu<br>245         | 250 |         |

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